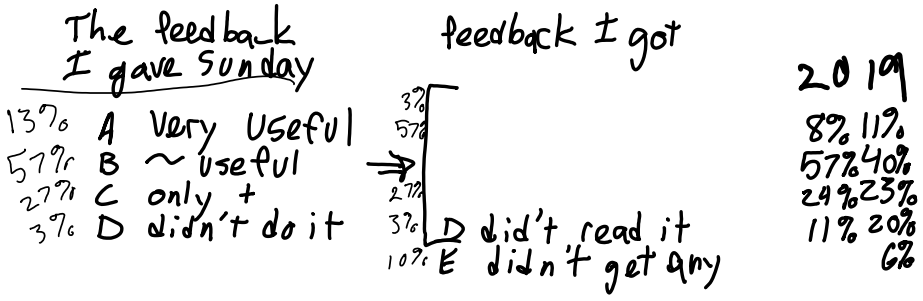
07 Process and sketching

Wednesday, January 30, 2019 1:38 PM

Today

Design process, ideal vs reality
Sketching and process

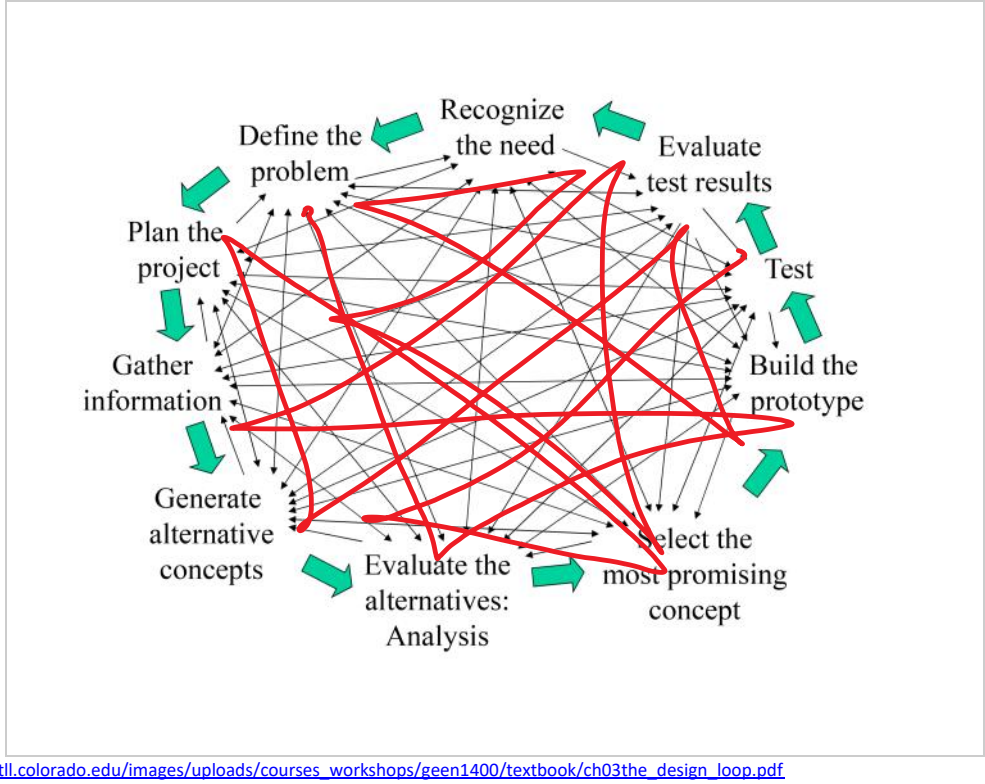
Read your last week post comments now!



Need a volunteer to collect attendance signups next week and 2nd Monday: Feb 3 - Feb 12. Scan and email to Behruz.

Design Process: Ideal vs Real

The Engineering Design Loop



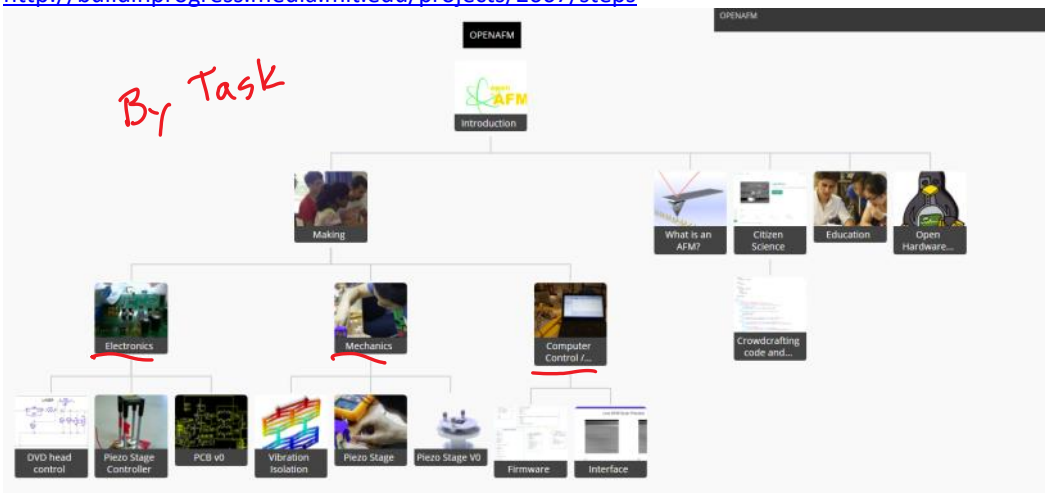
http://itll.colorado.edu/images/uploads/courses_workshops/geen1400/textbook/ch03the_design_loop.pdf

Works for the scientific process, the teaching process, the learning process.
Any iterative process that humans do

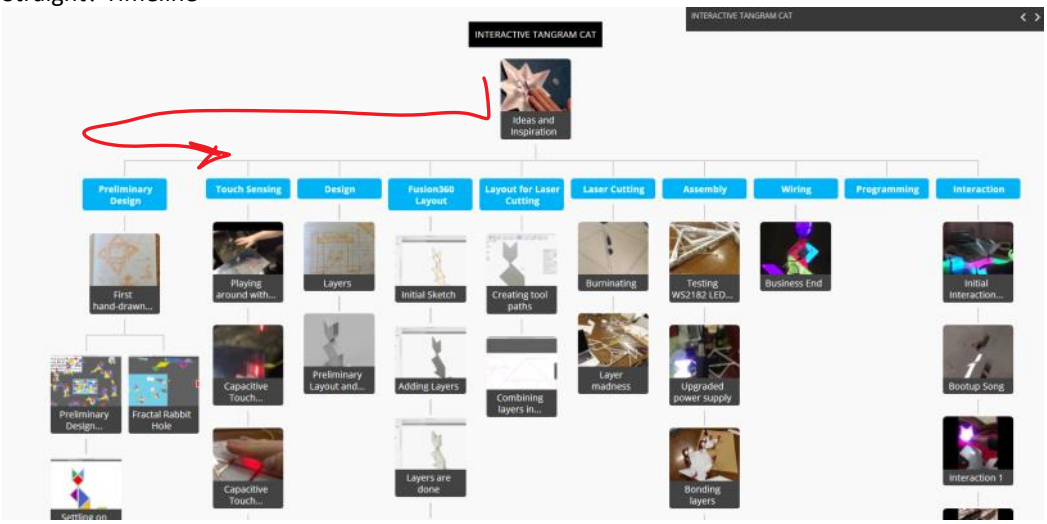
Is clean in concept, messy in reality

Other representations

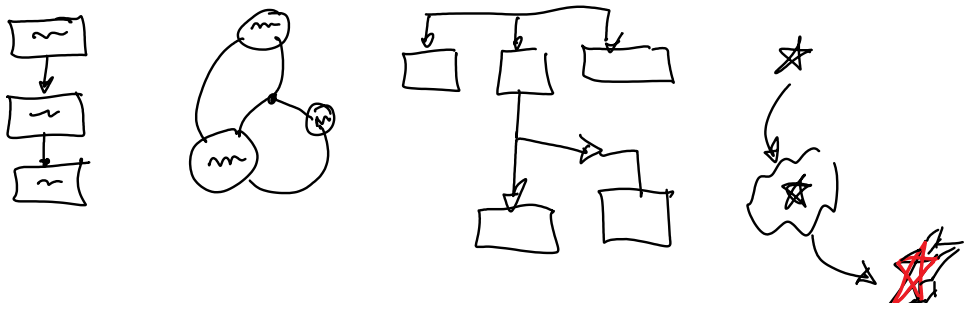
Build In Progress, design documentation platform by Tiffany Tseng
http://buildinprogress.media.mit.edu/projects/2667/steps



Straight? Timeline



In your sketchbook, draw a representation of a design process you experienced recently.
(Include this compared to your Upcycle process in your final Upcycle post)



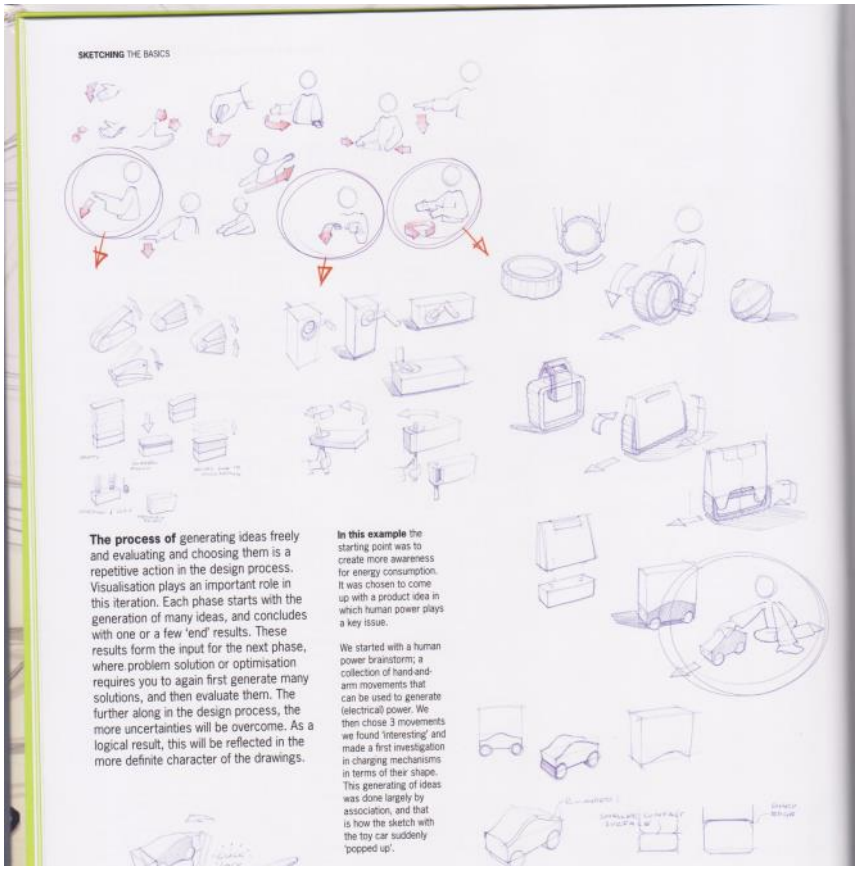
Each stage requires different sketches/drawings

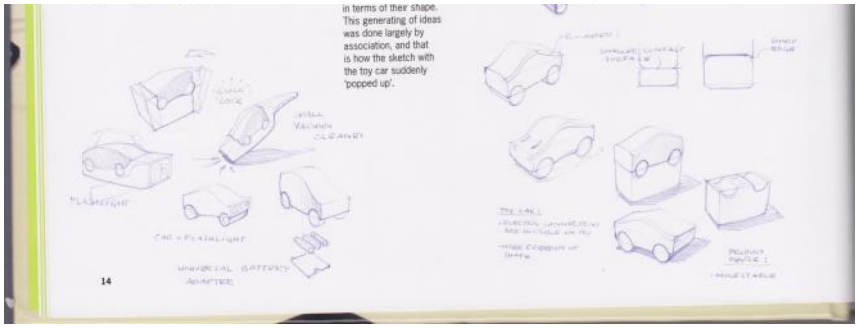
Industrial design calls for specific types of sketches:
http://www.idsa.org/education/what-is-industrial-design

IDSA = Industrial Designers Society of America

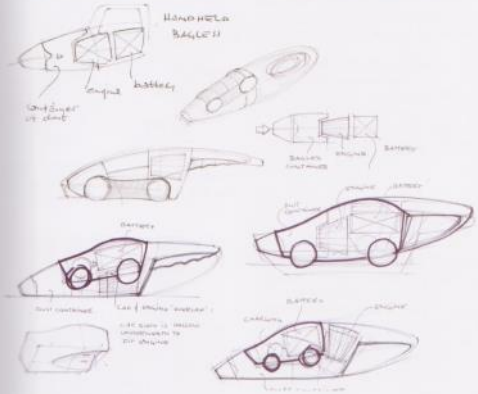
IDEATION

Steur, Roselien, and Koos Eissen. *Sketching: The Basics*. Amsterdam: BIS Publishers, 2011.

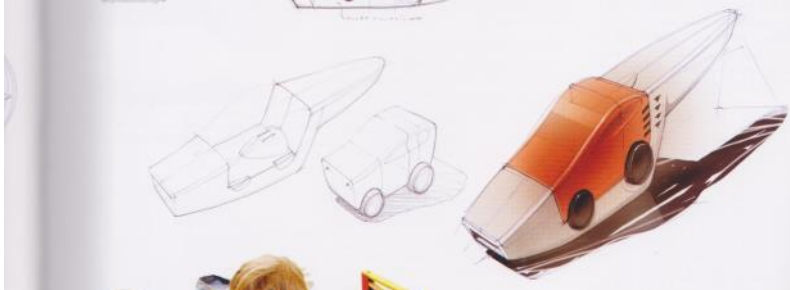




1.2 SKETCHING AND DESIGN PHASES



Concept Phase / Concept Sketching
Each outcome of the ideation phase may have its own 'problem areas' that need to be solved or optimised. The 'problem' may involve design, ethics, environmental impact, choice of material, technical options, assembly, safety, construction, cost effectiveness and so on. And each 'problem' will probably have several possible solutions. Again it is time to generate a variety of solutions, and then make a selection. Drawings typical in this design phase are more detailed than in the ideation phase. For instance, an exploded view drawing will show parts in relation to other parts and thereby could explore technical solutions. The outcome of the concept phase can result in several feasible ideas presentable to the client.



This actually was surprising; it had nothing to do with the original charging movement, but appeared as a reaction to the existing drawings. This key sketch was then picked up and used for further exploration, again generating several variations and ideas. Still early in the design, the final product idea is seen in the coloured drawing.

The final product idea consists of a combination between a toy car and a small bagless handheld vacuum cleaner. Inside the toy car is an alternator which charges a battery through the movements of the playing child. This is the power source of the vacuum cleaner.

Choosing Concepts

Choosing a concept can occur internally, with co-designers or management for example, or externally with a client. At this point you should present the different ideas in similar ways. Make sure an honest choice can be made, and not be blurred by the use of different handwriting or drawing styles. Presentations should be alike.

Design case chapter 4
Idea Dao Design

Presentation

Sketches and drawings can be used for presentation during several stages of design. Presentations can be in-house, among designers that work together, or externally. In each case different issues may be important.

A client, such as a producer outsourcing the design of his products, has of course knowledge of his field of products, his market and the technical details, and may want to compare the design with existing products and production techniques.

A professional from outside the product field or design, such as a sponsor, manager or user, requires other aspects of the drawings. He or she is usually unaware and not interested in the underlying technical details of the design, and may wish to have a clear and inspiring image of what the implications are of this product on a person's daily life.

Design case chapter 1
FLEX/the INNOVATIONLAB®

Pitch / Contest

A pitch or contest requires a specific type of presentation. During a pitch your idea should look its very best and reveal the context of the design. A pitch takes place with competitors, and your goal is to get the assignment or win the contest. So when pitching together with other designers, make sure your drawings tempt and convince the viewer.

Design case chapter 1
TurnKey Design

Design case chapter 1
TurnKey Design

Detailing

In this phase, all details are decided upon, such as the exact surface finish and size of a product. Several close-up drawings may be required, in combination with side views and perspectives. A variety of drawings usually works best to visualise both detail and its impact on the product as a whole.

Design and Communication

From the developed concepts, one final idea is chosen. This idea is further developed for realisation. In this phase details are being decided upon, engineering is done, and production is being prepared.

Problems are met, solved, optimised and communicated with various parties. An ideal situation would be for the designer to use the same drawings for design as for communication.

Design case chapter 1
Art Lebedev Studio

Shape Optimisation

Since an idea is never 'ready', a drawing is a good tool for developing something further in a short time, as sketches can be made quickly and suggestively. By using a technical drawing from engineering or a photo of an existing product as an underlay, you can quickly generate variations in shape. Pictures taken from a (foam) model will do the job as well.

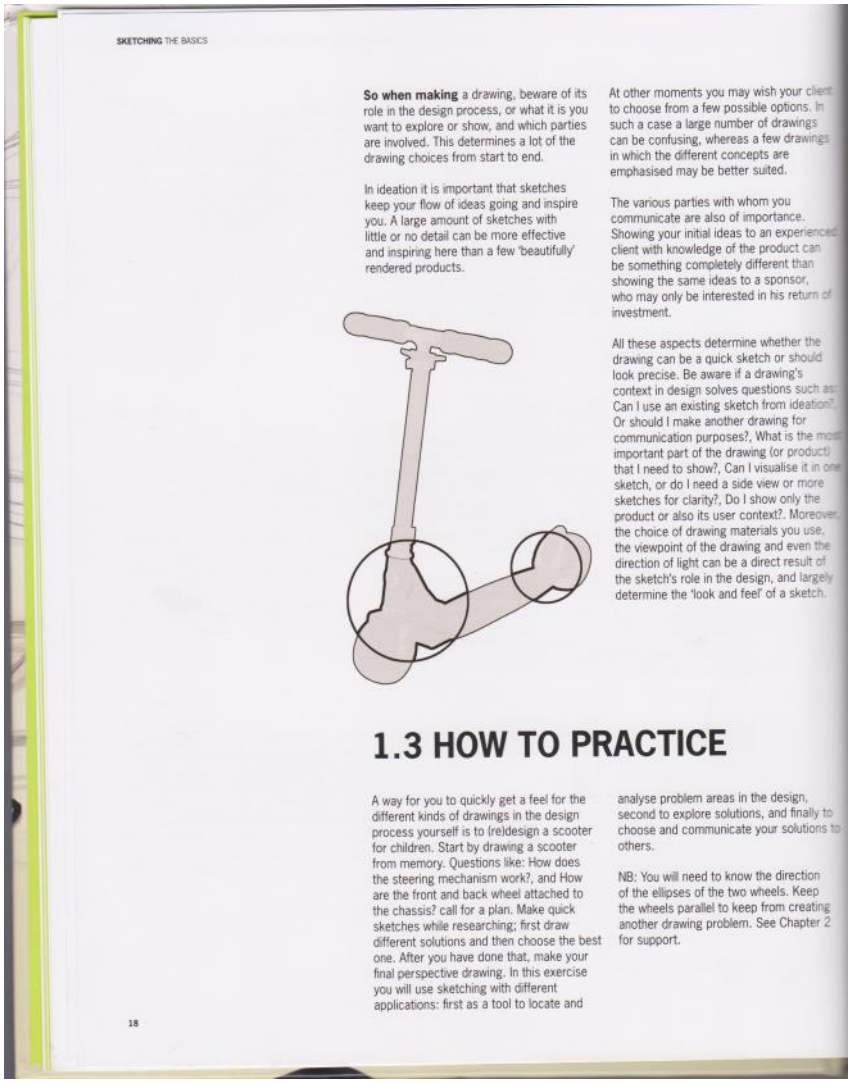
In any case, if the proportions of the shape allow, it is worthwhile to make an underlay, side views and perspective, and take time to optimise the object's form, as the emotional aspect of the product is often dependent on this.

Design case chapter 4
Van der Veer Designers

Pre-Engineering

When communicating with construction engineers just before the actual engineering begins, so called 'pre-engineering sketches' are made. These can be principle sketches of (partial) technical solutions, possibly made during an engineering meeting. Rough side view technical drawings and exploded views are commonly used drawings in this phase. Exploded views show components in relation to each other, and can give direction in assembly methods. Pure product information is important during this phase.

During the communication process, the different parties require specific drawings, showing different aspects of the product. Here you will find the use of underlays such as CAD drawings, renderings, and pictures of (foam) models very effective.



So when making a drawing, beware of its role in the design process, or what it is you want to explore or show, and which parties are involved. This determines a lot of the drawing choices from start to end.

In ideation it is important that sketches keep your flow of ideas going and inspire you. A large amount of sketches with little or no detail can be more effective and inspiring here than a few 'beautifully' rendered products.

At other moments you may wish your client to choose from a few possible options. In such a case a large number of drawings can be confusing, whereas a few drawings in which the different concepts are emphasised may be better suited.

The various parties with whom you communicate are also of importance. Showing your initial ideas to an experienced client with knowledge of the product can be something completely different than showing the same ideas to a sponsor, who may only be interested in his return of investment.

All these aspects determine whether the drawing can be a quick sketch or should look precise. Be aware if a drawing's context in design solves questions such as: Can I use an existing sketch from ideation?, Or should I make another drawing for communication purposes?, What is the most important part of the drawing (or product) that I need to show?, Can I visualise it in one sketch, or do I need a side view or more sketches for clarity?, Do I show only the product or also its user context?. Moreover, the choice of drawing materials you use, the viewpoint of the drawing and even the direction of light can be a direct result of the sketch's role in the design, and largely determine the 'look and feel' of a sketch.

1.3 HOW TO PRACTICE

A way for you to quickly get a feel for the different kinds of drawings in the design process yourself is to (re)design a scooter for children. Start by drawing a scooter from memory. Questions like: How does the steering mechanism work?, and How are the front and back wheel attached to the chassis? call for a plan. Make quick sketches while researching; first draw different solutions and then choose the best one. After you have done that, make your final perspective drawing. In this exercise you will use sketching with different applications: first as a tool to locate and analyse problem areas in the design, second to explore solutions, and finally to choose and communicate your solutions to others.

NB: You will need to know the direction of the ellipses of the two wheels. Keep the wheels parallel to keep from creating another drawing problem. See Chapter 2 for support.

"Thinking with a Pencil"

Hard if you don't have a clear vision.

Start with simple shapes: lines, squares, circles, ellipses.

Draw BIG (Chalkboards, white boards) and small (your notebooks, doodles)

Draw from models, things around you

Maybe start 2-D

Nelms, Henning. *Thinking with a Pencil*. Berkeley, Calif: Ten Speed Press, 1986.